REMARKS

This amendment is responsive to the Office Action of July 24, 2008. Reconsideration and allowance of the **claims 2-9, 11-22, and 25-36** are requested.

The Office Action

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. **Claim 5** was objected to for including the limitation, "a correct post-processing package which matches patent's limiting parameters" without a corresponding reference within the originally filed Detailed Description. **Claim 11** was objected to for including the limitation of using the specific optimization parameter correction of voltage and amperage without a corresponding reference within the originally filed Detailed Description.

Claim 17 and 19 were rejected under 35 U.S.C. §101 because the process steps are not tied to another statutory class nor do they execute a transformation.

Claim 22 was rejected under 35 U.S.C. §101 on the grounds that the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper process claim under 35 U.S.C. §101.

Claims 1-22 were rejected under 35 U.S.C. §112, second paragraph.

Claim 1-4, 10, 16-18, 21, and 22 were rejected under 35 U.S.C. §102(b) as being anticipated by Koritzinsky et al. (U.S. Patent No. 6,272,469).

Claims 5-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinksy et al. in view of Okerlund et al. (U.S. Patent Application Publication 2004/0225331).

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinsky et al. in view of Kawabuchi (U.S. Patent No. 7,062,016).

Claims 12-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinsky et al. in view of Bocioncek et al. (U.S. Patent Application Publication 2002/0085026).

Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinky et al. in view of Argiro et al. (U.S. Patent No. 5,986,662).

Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinsky et al. in view of Rothschild et al. (U.S. Patent Application Publication 2002/0016718).

Claim 20 was rejected under 35 U.S.C. §103(a) as being unpatentable over Koritzinksy et al. in view of Rothschild et al. further in view of Coleman et al. (U.S. Patent No. 6,306,089).

The Present Application

The present application is directed to a medical diagnostic imaging system coupled to a hospital network to optimize the throughput of a scanner. A workstation is coupled to the scanner and the hospital network and is used to control the scanner. The workstation includes a display, applications database, which is configurable by the user, and a user interface for displaying interactive user interface screens.

The present application optimizes the scanner's workflow. The present application streamlines examinations, automating the use of patient information to optimize the scanning protocol, improving patient throughput, and improving operational simplicity.

When the application was written, a 16 slice CT scanner could process 28 patients a day. With rising equipment costs and tightening health insurance reimbursements, hospitals want to process more patients, e.g., 40 patients, per day.

The present application looks to reduce the time required to get the scanner set up to scan each patient. For example, scanners typically have many hundreds of examination protocols. The operator has pages of options to scroll through and select among. The present application proposes to accelerate patient throughput in various ways such as:

(a) selecting a limited number of protocols from a menu of available protocols in accordance with entered patient size, patient age, radiologist identification, radiologist preferences, and the nature and region of patient to be scanned, and generating an operator interactive display of the limited number of protocols;

(b) automatically commencing post-processing during data acquisition in accordance with the types and format of images most commonly generated for a selected scan protocol;

(c) optimizing a tube voltage and tube current in accordance with an operator selected protocol;

(d) searching the hospital archive database for scans of a patient currently undergoing examination and routing the archive scans directly to the display terminal of a diagnosing radiologist, automatically without waiting for a transfer request;

(e) searching the hospital archive database to determine if a current examination is a follow-up examination, determining parameters and scan protocols used in prior scans, and setting the scanner to conduct the follow-up examination using the same parameters and scan protocols;

(f) searching the hospital archive database to determine preferences of a diagnosing radiologist and adjusting level, zoom, slice and slab thicknesses, windowing, and other display characteristics in accordance with the retrieved preferences of the diagnosing radiologist;

(g) merging groups of slice images into a smaller number of slab images, sequentially displaying the slab images, and displaying the individual slice images corresponding to each slab image designated by a diagnosing radiologist;

(h) generating a series of prompts to an operator to lead the operator sequentially through an imaging procedure;

(i) for each scanner, automatically generating a digital log book by collecting entered patient information and scan information for each patient examined by the corresponding scanner;

(j) at the beginning of a scan procedure, automatically uploading scan protocol information previously submitted from a remote computer or PDA.

The above description of the present application is presented to the Examiner as background information to assist the Examiner in understanding the application. The above description is not used to limit the claims in any way.

The References of Record

Koritzinsky et al. is directed to an imaging system protocol handling method for medical diagnostic institutions and systems. Protocols are created and stored in a central location with descriptions displayed at each scanner diagnostic system. A user at the control can select a protocol from the interface and the selected protocols are then transferred from the central scanner to the diagnostic system. The transfer takes place over a network and may be subject to fee arrangements.

One "advantage" of Koritzinsky is that it gives the scanner operator access to many more protocols. While choice has advantages, sorting through a larger number of available protocols slows patient throughput. Moreover, the selected protocol must be downloaded and installed, further slowing the patient imaging procedure and reducing patient throughput. Koritzinsky has other advantages such as updating a protocol at one location rather than one at every scanner and enabling a user to pay by the use rather than buying rarely used protocols. But these further advantages do not improve patient throughput.

Okerlund et al. is directed to a method of planning arterial fibrillation including obtaining acquisition data from the imaging system and generates a 3D model of the atrium and veins of the patient. The 3D models are registered on an interventional system.

Kawabuchi is directed to a method for preventing overheating of X-ray apparatus. The method includes estimating quantities of heat dissipated from the X-ray tube and a high-voltage generator that supplies power to the X-ray tube during the acquisition, and optimizing a control parameter, which is used to control the X-ray tube and the high-voltage generator, on the basis of estimates of the quantities of heat dissipated during the acquisition so as to prevent overheat of the X-ray tube and the high-voltage generator.

Bocionel et al. is directed to a medical system architecture having a modality for the acquisition of examination images, a device allocated to the modality for processing the examination images, a device for the transmission of data and the examination images and a device for storing the data and examination images, the device for processing the examination images is fashioned as an RIS client for the exchange of text messages as well as for the display of an RIS client window and for

the creation of RIS interaction masks, and is connected via a network connection of the devices to an RIS server for communication with the RIS client on the devices.

Argiro et al. is directed to computerized system and method for viewing a set of voxel data on a display device attached to a computer. A retrieve data set component retrieves the set of voxel data, the set of voxel data having already been acquired in accordance with acquisition parameters of a protocol. A protocol selector component selects the protocol in accordance with the set of voxel data retrieved, the protocol including preset adjustments for the volume-rendering of the data. An image gallery component displays one or more images of the set of voxel data in accordance with the preset adjustments of the protocol.

Rothschild et al. is directed to a medical image management system and method that uses a central data management system to centrally manage the storage and transmission of electronic records containing medical images between remotely located facilities. The system also provides for packaging an image for secure transmission and for tracking delivery and review of images and various attachments or augmentations to the image files.

Coleman et al. is directed to an ultrasonic diagnostic imaging system with an analysis package by which measurements and calculations can be made using ultrasonic image data. The analysis package includes the ability for a user to define custom exam protocols, custom measurements or custom calculations.

Claim Objections

In reference to the objection of **claim 5**, "automatically launching a correct post-processing package which matches patient's limiting parameters entered by the user into data entry fields" refers to the post-processing means searching a post-processing memory or database for a post-processing package that matches the patient's limiting parameters entered by the user. Further description of this protocol selection means can be found in paragraph [0039], lines 1-7, paragraph [0040], lines 1-6, and claim 23, part (b) of the Pre-Grant Publication.

In regards to the objection of **claim 11**, antecedent basis for using the optimization parameters to correct the voltage and the amperage supplied to the

scanner can be found in paragraph [0042], lines 1-5, and claim 23, part (c) of the Pre-Grant Publication.

35 U.S.C. §101

Claims 17 and 19 have been amended to claim means that are tied to statutory class.

Claim 22 has been amended to set forth steps of the process and claim the process claim in proper form.

35 U.S.C. §112

Claim 1 has been amended to clearly define the limitations within the claim.

Claim 22 has been amended to clearly set forth the steps of the method of the claim the Applicant is intending to encompass.

The Claims Distinguish Patentably
Over the References of Record

Claims 2-4, 10, 16-18, 21, and 22 are not anticipated by Koritzinsky et al. Applicants respectfully submit that this rejection is improper and/or erroneous. Accordingly, the rejection is hereby traversed.

More specifically, regarding **claim 2**, Koritzinsky et al. does not disclose a protocol configuration means for configuring examination protocols in response to receiving patient limiting parameters entered by the user into at least data entry fields displayed on the user interface screens. Additionally, Koritzinsky et al. discloses that new or additional protocols may be added to the listing from time to time and that the user may upload the examination configurations by selecting images or text with a particular protocol. Koritzinsky et al. does not disclose that that in response to receiving the patient limiting parameters (such as those listed in claim 25) entered by the user, the protocol configuration means configures optimal examination protocols based specifically on the patient limiting parameters.

Accordingly it is submitted that independent **claim 2** and **claims 4, 6-8, and 19-21** dependent therefrom distinguish patentably over the references of record.

Claim 3 is directed to an improvement that Koritzinsky could use but does not recognize. Koritzinsky has a very large number of available protocols from which the user must choose, many of which are not optimal or appropriate to the current patient. Claim 3 sets forth a protocol selection means which causes only a limited number of examination protocols for the user to search among. Giving the user a small number, e.g., 1 to 6 protocols, to choose among rather than the 100s or possibly 1,000s that are available in Koritzinsky significantly reduces the set-up time and accelerates patient throughput.

Accordingly, it is submitted that **claim 3** and **claims 5, 9, 11-18 and 25** dependent therefrom distinguish patentably over the references of record.

Claim 4 calls for a post-processing configuration means for configuring a post-processor in response to receiving acquisition and post-processing parameters entered by the user into at least data entry fields displayed on the user interface screens. Koritzinsky et al. does not disclose that in response to receiving the optimization parameters entered a post-processing configuration means configures post-processing packages based on the optimization parameters.

Claim 22 calls for matching the patient limiting parameters with the optimal protocols stored in the application database; and displaying the most appropriate optimal examination protocols for the examination of the patient in response to the results of the matching. Koritzinsky et al. does not disclose that in response to receiving a patient's limiting parameters; matching the limiting parameters and the examination protocols and displaying the most appropriate optimal examination protocols in response to the results of the matching.

Claim 5-9 are patentable over Koritzinksy et al. in view of Okerlund, et al.

Claim 5 calls for a post-processor for automatically commencing a correct post-processing package during acquisition of the data in accordance with types and formats of images commonly generated by the selected protocol. This starts the computationally intensive reconstruction process even before the operator selects the reconstruction parameters. Neither Koritzinksy et al. or Okerlund et al., nor the combination, disclose or fairly suggest such a processor.

Claims 8-9, calls for a visualization configuration means for configuring visualization parameters in response to receiving the selected protocol entered by the user. The visualization parameters include slice or slab thickness, zoom, and windowing. Neither Koritzinksy et al. or Okerlund et al., nor the combination, disclose or fairly suggest configuring visualization parameters in response to receiving acquisition and post-processing parameters.

Claim 11 is patentable over Koritzinsky et al. in view of Kawabuchi.

Claim 11 calls for a parameters optimization means for automatically selecting optimization parameters based on the selected examination protocol to correct: voltage supplied to the scanner x-ray source, amperage supplied to the scanner x-ray source, and a dose supplied to the patient. Neither Koritzinksy et al. nor Kawabuchi, nor the combination, disclose or fairly suggest such automatic selection or the time savings and improved patient throughput that it achieves.

Claim 20 is patentable over Koritzinksy et al. in view of Rothschild, et al. further in view of Coleman et al.

Claim 20 calls for a measurement protocol means for selecting a correct measurement protocol in response to receiving patient's limiting parameters entered by the user. Neither Koritzinksy et al. or Rothschild et al. or Coleman et al., nor the combination, disclose or fairly suggest in response to a patient's limiting parameters correct selecting a measurement protocol.

New **claim 26** claims subject matter similar to claim 3, bt without using "means" language.
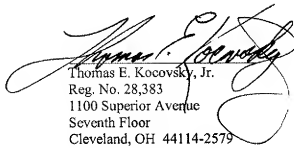
CONCLUSION

For the reasons set forth above, it is submitted that **claims 2-9, 11-22 and 25-36** distinguish patentably and unobviously over the references of record. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

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